

REMARKS

Claims 1-22 were originally filed in the present application. In a Preliminary Amendment filed on January 31, 2005, claims 1-22 were cancelled and claims 23-44 were added. In response to the restriction requirement of the Office Action mailed March 22, 2005, claims 23-34 were withdrawn and Applicants elected Group II, corresponding to claims 35-44.

Applicants note with appreciation the indication of allowance of claims 38-44.

Claim 35 has been amended. The specification has been amended to correct an error of typographical nature. No new matter has been introduced by the amendments to the claims or specification.

Reconsideration of presently pending claims is respectfully requested in light of the above amendments and the following remarks.

I. Rejections Under 35 U.S.C. §103

Claim 35

Amended claim 35 recites the following:

35. A semiconductor device comprising:
a layer of FSG disposed on a substrate;
a layer of USG, having an upper surface, disposed on the layer of FSG; and
a via hole having a barrier layer on walls thereof, wherein the barrier layer extends from the upper surface to the substrate, and wherein the via hole is filled with a predetermined material.

Claim 35 was rejected under 35 U.S.C. §103(a) as being unpatentable over Tsai, et al. (US Patent No. 6,319,814 hereinafter referred to as “Tsai”).

Applicant traverses this rejection on the grounds that the reference is defective in establishing a prima facie case of obviousness with respect to claim 35.

As the PTO recognizes in MPEP § 2142:

... The examiner bears the initial burden of factually supporting any prima facie conclusion of obviousness. If the examiner does not produce a prima facie case, the applicant is under no obligation to submit evidence of nonobviousness...

It is submitted that, in the present case, Tsai is insufficient to support a *prima facie* case of obviousness for at least the following reasons.

1. The References Do Not Teach the Claimed Subject Matter

The Tsai patent cannot be applied to reject claim 35 under 35 U.S.C. § 103 which provides that:

A patent may not be obtained ... if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains ... (Emphasis added)

Thus, when evaluating a claim for determining obviousness, all limitations of the claim must be evaluated. However, since Tsai does not teach "a via hole having a barrier layer on all walls thereof, wherein the barrier layer extends from the upper surface to the substrate, and wherein the via hole is filled with a predetermined material" as is claimed in claim 35, it is impossible to render the subject matter of claim 35 as a whole obvious, and the explicit terms of the statute cannot be met.

For example, Tsai recites the following:

The FSG dielectric layer 210 and the USG liner 208 are etched, so that a dielectric opening 222 which exposes a part of the conducting layer 202 is formed in the FSG dielectric layer 210a and the USG liner 208a.

Referring to FIG. 2H, a conducting layer is formed to fill the trench 220 and the via opening 222, wherein the conducting layer may include copper.
Tsai, Column 4, Lines 39-45.

Thus, Tsai is clear that the dielectric or via opening is filled without any barrier layer included on the via hole walls. For at least this reason, a *prima facie* case of obviousness has not been met, and the rejection under 35 U.S.C. §103 should be withdrawn.

U.S. Patent Application No. 10/791,014
Reply to Office Action of August 17, 2005

Attorney Docket No. TSMC2000-488 / 24061.596
Customer No. 42717

II. Conclusion

Applicants thank the Examiner for the allowance of claims 38-44. It is clear from all of the foregoing that independent claim 35 is in condition for allowance as well. Dependent claims 36-37 depend from and further limit independent claim 35 and therefore are allowable as well.

An early formal notice of allowance is requested.

Respectfully submitted,



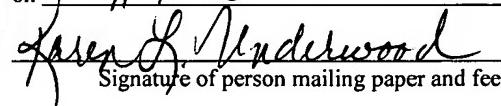
Steven T. McDonald
Registration No. 45,999

Dated: 9 November 2005

HAYNES AND BOONE, LLP
901 Main Street, Suite 3100
Dallas, Texas 75202-3789
Telephone: 972/739-8644
Facsimile: 972/692-9075

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

on 11-10-05



Karen L. Underwood
Signature of person mailing paper and fee